

U.S. Patent Application No. 09/857,490
Amendment dated November 1, 2005
Reply to Office Action dated August 1, 2005

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Canceled)
2. (Currently amended) The furnace carbon black producing process in accordance with claim ~~1~~ 15, wherein ~~the heated, dewatered off-gas is employed in a deep fuel rich combustion strategy without other combustible gas feed streams to the burner in steps (c) - (e), the heated, dewatered off-gas from step (b) is the only combustible gas supplied to the burner portion and wherein the combustible gas feed stream and oxidant gas feed stream are controlled to provide deep rich fuel conditions in steps (d) and (e).~~
3. (Currently amended) The furnace carbon black producing process in accordance with claim ~~1~~ 15, wherein the heated, dewatered off-gas is dewatered by means of pressure swing absorption.
4. (Currently amended) The furnace carbon black producing process in accordance with claim ~~1~~ 15, wherein the off-gas is subjected to plasma heating subsequent to removal of carbon black therefrom and prior to being fed to the burner portion.
5. (Currently amended) The furnace carbon black producing process in accordance with claim ~~1~~ 15, wherein ~~an~~ the oxidant gas feed stream ~~to the burner~~ is subjected to plasma heating

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prior to being fed to the burner portion.

6. (Currently amended) The furnace carbon black producing process in of claim † 15, wherein hydrocarbon feedstock is subjected to plasma heating prior to being fed to the carbon black furnace.

7. (Currently amended) The furnace carbon black producing process of claim † 15, wherein combustion gases produced in the burner portion by combustion of the heated, dewatered, off-gas with an the oxidant gas feed stream are subjected to plasma heating prior to contacting make hydrocarbon feedstock in the reactor portion of the carbon black furnace.

8. (Currently amended) The furnace carbon black producing process of claim † 15, wherein the oxidant gas feed stream to the burner portion comprises air plus oxygen enhancement, wherein the oxygen enhancement is produced by a pressure swing adsorption process.

9. (Withdrawn) A furnace carbon black producing process wherein plasma heating is used.

10. (Withdrawn) The furnace carbon black producing process in accordance with claim 9 wherein off-gas is subjected to plasma heating subsequent to removal of carbon black therefrom and prior to being fed to a burner portion of the same or a different carbon black furnace.

11. (Withdrawn) The furnace carbon black producing process in accordance with claim 9 wherein an oxidant gas feed stream to a burner portion of the same or a different carbon black

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furnace is subjected to plasma heating prior to being fed to the burner.

12. (Withdrawn) The furnace carbon black producing process in claim 9 wherein hydrocarbon feedstock is subjected to plasma heating prior to being fed to the furnace.

13. (Withdrawn) The furnace carbon black producing process of claim 9 wherein combustion gases produced in a burner portion of the same or a different carbon black furnace are subjected to plasma heating prior to contacting make hydrocarbon feedstock in the reactor of the carbon black furnace.

14. (Withdrawn) The furnace carbon black producing process of claim 9 wherein the oxidant gas feed stream to the burner comprises air plus oxygen enhancement, wherein the oxygen enhancement is produced by a pressure swing adsorption process.

15. (New) A furnace carbon black producing process comprising the steps of:

(a) obtaining off-gas from a carbon black furnace,

(b) dewatering and heating the off-gas and substantially removing any existing carbon black therefrom to obtain dewatered and heated off-gas, and then

(c) feeding the dewatered and heated off-gas in a combustion gas feed stream and feeding an oxidant gas in an oxidant gas feed stream to a burner portion of the carbon black furnace, wherein the carbon black furnace comprises a burner portion wherein a combustion gas feed stream is combusted in the presence of an oxidant gas feed stream to produce hot combustion gases and a reactor portion wherein carbon black is produced by an interaction of the hot

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combustion gases with a hydrocarbon feedstock supplied to the reactor portion,

(d) controlling the combustion gas feed stream and oxidant gas feed stream so that the combusting of the combustion gas feed in the burner portion to produce hot combustion gases takes place in a fuel-rich condition so that the combustion gas feed stream does not completely combust in the burner portion of the carbon black furnace, and

(e) producing carbon black in the reactor portion of the carbon black furnace by interaction of the hot combustion gases with a hydrocarbon feedstock under said fuel rich conditions.

16. (New) The process of claim 15, wherein steps (a) through (e) are repeated and wherein step (e) of producing carbon black provides the off-gas for the succeeding step (a).

17. (New) The process of claim 15, wherein in carrying out step (e), a hydrocarbon feedstock is supplied to the reactor portion by feeding the hydrocarbon feedstock to a passage between the burner portion and the reactor portion of the carbon black furnace.

18. (New) A furnace carbon black producing process comprising the steps of:

(a) obtaining off-gas from a carbon black furnace,

(b) dewatering and heating the off-gas and substantially removing any existing carbon black therefrom to obtain dewatered and heated off-gas, and then

(c) feeding the dewatered and heated off-gas in a combustion gas feed stream and feeding an oxidant gas in an oxidant gas feed stream to a burner portion of a carbon black furnace, wherein the carbon black furnace to which the combustion gas feed stream and oxidant gas feed

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stream are fed is a different carbon black furnace from the carbon black furnace of step (a), wherein the carbon black furnace to which the combustion gas feed stream and oxidant gas feed stream are fed comprises a burner portion wherein a combustion gas feed stream is combusted in the presence of an oxidant gas feed stream to produce hot combustion gases and a reactor portion wherein the hot combustion gases interact with a hydrocarbon feedstock to produce carbon black,

(d) controlling the combustion gas feed stream and oxidant gas feed stream so that combustion of the combustion gas feed in the burner portion to produce hot combustion gases takes place in a fuel-rich condition so that the combustion gas feed stream does not completely combust in the burner portion, and

(e) producing carbon black in the reactor portion of the carbon black furnace by interaction of the hot combustion gases with a hydrocarbon feedstock under said fuel rich conditions.